A New Research-Based Case Teaching Method for an Occupational Quality Curriculum Based on Moodle

https://doi.org/10.3991/ijet.v17i09.30929

Feng Xiao
Hengyang Preschool Education College, Hengyang, China
20150256@stu.nun.edu.cn

Abstract—Aesthetic education plays an extremely important role in college students' aesthetic culture, physical and mental health, and the formation of outlook on life, values, world outlooks. However, in view that theoretical and stereotyped teaching still exist in current aesthetic teaching, relevant teaching content lacks innovation, it is difficult to substantially improve students' aesthetic ability. Therefore, it is necessary to improve the existing college occupational quality curriculum system. Therefore, an integrated research-based case teaching based on Moodle teaching system was proposed. Firstly, the application of Moodle teaching system under Six Sigma Management Method in teaching was analyzed, and a learning system in the dynamic environment for object learning was established in a modular manner, integrated with interactive analysis, research-based case teaching mode. Taking the aesthetic appreciation link of college occupational quality curriculum as an example, specific teaching mode was designed. Through questionnaire survey, the research has found that this teaching mode is significantly superior to traditional teaching mode, and students are also satisfied with website design, teaching content, learning interest in the Moodle teaching system integrating research-based case teaching.

Keywords—research-based case teaching, Moodle, occupational quality curriculum; interactive analysis

1 Introduction

Superior occupational quality includes comprehensive quality in various aspects such as professional knowledge theory, excellent professional skills, positive professional attitudes, and noble professional ethics. It is the first force for successful career in the workplace and the key to guarantee vocational college students' qualification in their career. Occupational quality is divided into explicit and implicit qualities. The explicit occupational quality represents the superficial characteristics, which can be changed and developed through education in a short time. Occupational qualities such as occupational awareness, occupational attitude, occupational behavior play a decisive role in the performance of college students, which can be changed under long-term influence. Occupational quality is the key factor in which the practitioner is engaged in the career and state over decades' career life. With the increasing pressure of

enrollment, employment, many colleges emphasize on cultivating students' expertise, professional skills while obviously neglecting insufficient attention to students' occupational quality, resulting in the lack of students' comprehensive occupational quality [1]. In order to address these problems and improve people's aesthetic ability, in recent years, educators have attached importance to university aesthetic education. For example, in April 2021, the China Ministry of Education proposed that it is very necessary to "cultivate the spirit of craftsmanship" in university education, setting higher requirements for the quality of talents. Excellent occupational quality is the foundation of achieving goals. Therefore, it is of great significance to attach sufficient importance to university's occupational quality education.

Currently, universities and colleges are gradually paying attention to occupational quality education, and some specific colleges attach importance to the construction of occupational quality curriculum systems integrating in-class and extracurricular activities. However, these occupational quality curriculum teaching is theory and model oriented, without detailed, micro teaching practice, and some vocational colleges have begun to set independent occupational quality courses. However, this approach that has been initially introduced to higher vocational curriculum construction and limited to "theoretical" education model lacks the integration of the characteristics of the current era and the ideological characteristics of the students, so that occupational quality training has not been conducted completely through the whole educational process. In view of this, for the purpose of promoting occupational quality curriculum reform and providing occupational talents for the society, this paper is focused on studying the teaching model of occupational quality curriculum. Specifically, the occupational quality curriculum teaching mode proposed in this paper introduces hybrid learning model based on Moodle teaching system, that is, to conduct occupational quality teaching by comprehensive use of all kinds of learning theories and techniques, thereby realizing the teaching effect of comprehensive curriculum and improving students' autonomous learning ability. On the other hand, this paper also establishes a research-based case teaching model based on knowledge experience by virtue of Six Sigma theory, so as to strengthen college students' interest in occupational quality curriculum, enhance their application ability of occupational quality and skills. Although research-based case teaching has been widely used in teaching practice, many of them are based on traditional interactive mode, so that it is difficult to directly connect with the interactive effect. Therefore, it is necessary to introduce new interactive mode. This paper introduces a research-based case teaching model based on Moodle teaching system, which will greatly enhance the effect of occupational quality cultivation.

2 State of the art

In recent years, university occupational quality curriculum has received great attention from many scholars. Some scholars have focused on various teaching modes of university occupational quality curriculum. For example, Alsane [2] proposed to conduct occupational quality curriculum education in nurse cultivation. They evaluated predictors of team development and performance on a final project in a large

Interprofessional Quality Improvement and Patient Safety course. Zilic [3] identifies the causal effect an educational reform implemented in Croatia in 1975/76 and 1977/78 had on educational and labor market outcomes and found that the reform of adding occupational quality education in labor education can help improve the technical level of workers and promote the development of the labor market. Purnomo et al [4] attempted to increase the education of professional literacy in the printing industry and the team believed that vocational education has become the new trend in industry, and this model will boost the industry for future development. They developed a collaboration program called Asian Printing Training Center that compensates for academic weaknesses through industrial strength, and industrial weaknesses through academic strength. Thailand is our reference for developing Malaysia and Indonesia. With the deepening of China's vocational education, scholars have gradually found that modern vocational education must cultivate the operational skills of technical talents and focus on their occupational quality education, requiring teachers to adopt a variety of approaches to cultivate students' occupational quality. Zhai [5] found defects in the current occupational quality training among vocational colleges and recommended to analyze environmental historical changes in occupational quality based on occupational quality cultivation practice in vocational colleges and adhere to the concept of "return to professional activities", reconstruct a system of incorporating occupational quality to vocational education curriculum. Some researchers pointed out that the core competitiveness is the key to cultivating talents with high quality, high culture, and high levels in colleges and universities. At the occupational education stage, colleges and universities should improve the "core competitiveness" of the college students according to enterprise requirements for talents, gradually meet the occupational needs of training improvement, skill enhancement and enrichment, establish university-enterprise cooperation education mechanism. This method that can strengthen professional skills and business training of talents can help enhance students' occupational quality. Liu et al. [6] proposed that modern apprentice can be used as a way to improve students' occupational quality. In this mode, the subject, object, mediator and environment of student occupational quality cultivation have changed positively. It is believed that the current occupational quality model requires higher vocational colleges to transform cultivation concept, develop the awareness of occupational quality two-subject cultivation, and construct a two-way teachers’ team to improve the efficiency of occupational quality cultivation, so as to effectively strengthen students' occupational quality. With the rapid development of teaching information, continuous improvement of MOOC improvement and construction, it has impacted traditional education model and also provided positive reference value for occupational quality teaching reform. Through some researches on new teaching learning mechanisms such as "openness", "self-media release", "active learning" of MOOC, it is found that these advanced teaching tools can effectively facilitate vocational training to break through time and geographical restrictions, integrate occupational quality with self-learning, work process, and enhance employees’ occupational quality. Based on these principles, the author believes that when constructing occupational quality curriculum system among universities and colleges, it is feasible to adopt MOOC model and conduct top-level design based on aesthetic classicization and diversification.

A few scholars have studied the application of Moodle teaching platform in a variety of occupational training curriculum. For example, Liang [7] established the occupational quality curriculum based on the Moodle teaching platform, and believed that the existing teaching platform lacks intelligence, interaction and experience, so that emotional education and personality education in quality curriculum cannot achieve satisfactory teaching results. Therefore, the author believes that it is necessary to construct an AI teaching platform based on Moodle model in accordance with problems in the curriculum informationization teaching, emphasize on improving classroom interactivity, so as to get more students actively participated in classroom teaching. Pan [8] believed in the age of digital media, universities should make full use of information technology such as digital media to expand the teaching resources of the aesthetic education, effectively utilize the teaching platform such as Moodle to enrich aesthetic education, thereby improving the teaching effect of aesthetic education class. Zhen [9] designed the basic teaching courses in artistic higher vocational schools based on the platform, believed that the Moodle teaching platform created an abundant learning environment for students. Taking sector pattern as an example for research, it was found that the teaching platform has provided teachers and students with a platform for mutual promotion, communication, and mutual collaboration. Teachers could know students' learning dynamics, and students could also get access to more rich teaching resources. Chen et al. [10] worked on a Moodle-based hybrid learning mode consisting of preliminary demand analysis, hybrid learning design, hybrid learning evaluation based on the hybrid learning concept according to current art learning status in colleges and universities. Taking Photography Foundation as an example, the effect of this learning mode was analyzed. It was found that Moodle-based hybrid learning mode could significantly improve students' learning effects and course teaching effect.

As seem from above various research, with the rapid development of information technology, it is unanimously believed that college occupational quality curriculum needs further optimization but few scholars have studied the methods of optimization. Despite a hybrid teaching mode and Moodle teaching platform mentioned by some scholars, they have not fully explained or mentioned the application effect of the teaching modes. In addition, scholars have seldom mentioned the application of the integrated research-based case teaching mode in occupational quality curriculum, while occupational quality curriculum based on research-based case teaching can often improve students' understanding of the aesthetics. Therefore, when establishing occupational quality curriculum system in this paper, Moodle teaching system combined with research-based case teaching was applied, and the application effect of this teaching system was verified.

3 Integrated research-based learning mode based on Moodle teaching system in occupational quality curriculum

3.1 Application of six sigma management method in teaching

Six Sigma Management Method [11] is a problem-centered management method involving five-stage management modes, namely, define-measure-analyze-improve-control. Based on this method, the research-based learning mode based on Moodle teaching system was established, where Moodle teaching system is a dynamic environment providing object learning in modular way, teachers can use the using this teaching system to transfer related teaching documents, and students can get access to relevant learning resources. The simple interface of the entire teaching system allows teachers and students to design pages according to the actual needs. Moodle teaching system has another important advantage, that is, the system can also guide students to constantly learn, evaluate, and create, making it become an effective online learning community. Thanks to this advantage, the research-based learning mode can be implemented. The specific design of this mode in college occupational quality curriculum is shown in Figure 1:

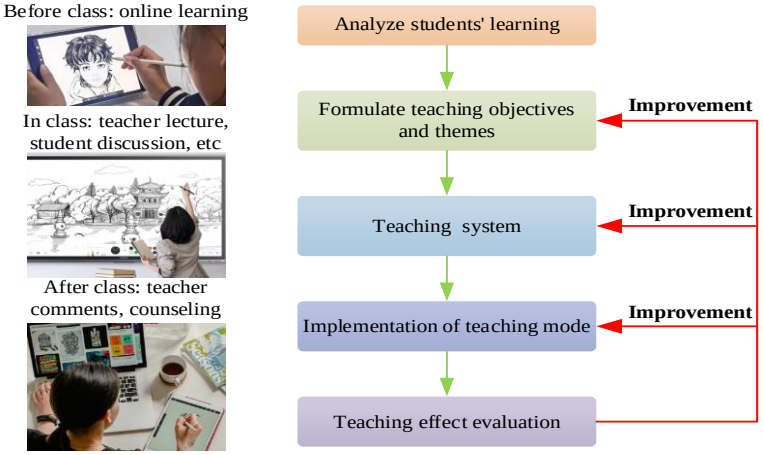

Fig. 1. The application of research-based case teaching mode based on Moodle teaching system in occupational quality curriculum

It can be seen that the application of research-based case teaching mode in the application of occupational quality curriculum is composed of six links: first, it can analyzed the study status of the students to determine the research object; second, it can plan the research case teaching objectives and teaching topics based on the research object; third, research-based case teaching mode based on Moodle teaching system can be designed in combination with the teaching theme; fourth, the implementation of research-based case teaching mode based on the Moodle teaching system includes student preview, teacher explanation, student discussion, teacher reviews; fifth is teaching

effect evaluation, including summative evaluation and process evaluation; sixth is improvement to solve the problem found in the evaluation and to improve the research-based case teaching mode.

3.2 Integration of information technology-based interaction analysis with Moodle teaching system

In order to improve students' occupational quality curriculum effect, it is necessary to provide different learning resources for students according to their actual situation. Therefore, interactive analysis method is used in this paper. Its basic idea is to regard students' different characteristics, such as age, learning grades, as different attributes to develop one or a set of learning resources for each type of attribute. By providing different resources for students from different characteristics, and scoring different resources according to students' learning effects, students' evaluation results can be maintained consistent with students' scores, thus analyzing students' resource selection behavior.

Estimation of attribute level. For students who study occupational quality curriculum, attributes such as their age, academic performance and the interest in art are often intermittent. Therefore, when estimating the attribute level, the discrete linear mode will be used, as follows:

$$Y = a + \sum_{i=1}^{m} \sum_{j=1}^{k_i} e_{ij} x_{ij} \tag{1}$$

Among them, Y is student resource preference score of the occupational quality curriculum. e_{ij} is the effectiveness of the j-th level of the i-th characteristic, x_{ij} is 1 or 0, where 1 means the j-th level of characteristic i appears, 0 means others. The total utility of all characteristics can be represented as follows:

$$U(x) = \sum_{i=1}^{m} \sum_{j=1}^{k_i} e_{ij} x_{ij} \tag{2}$$

Typically, students' characteristics are also distinguished by the importance. Its importance C_i can be expressed by the difference between the maximum value and the minimum value:

$$C_i = \max(e_{ij}) - \min(e_{ij}) \tag{3}$$

Considering that importance level is a relative indicator, standardized processing is performed on the importance C_i, the result is:

$$W_i = \frac{C_i}{\sum_{i=1}^{m} C_i} \tag{4}$$

According to this formula, the sum of the importance of each characteristic is 1.

Estimation of attribute of interactive learning effect. Generally, five attributes can effectively predict the effect of interactive learning effect.

The first a network structure entropy, which mainly involves the heterogeneity of students' knowledge network, and it can be expressed as:

$$E = \sum_{i=1}^{N} W_i \ln(W_i) \tag{5}$$

The second is the distribution index, and its attribute mainly depicts the richness of interactions, specifically expressed as:

$$D = e^{-\frac{2KE}{N}} \tag{6}$$

Third is the total activation volume, which refers to the overall ability to apply knowledge to solve problems as follows:

$$A = \sum A_i \tag{7}$$

The fourth is the average path length, which represents the mean of distance between any two nodes, expressed as:

$$L = \frac{2}{N(N-1)} \sum d_{ij} \tag{8}$$

The fifth is the growth rate of theme, In the research-based case teaching mode based on Moodle teaching system, teachers often need to plan teaching objectives and teaching topics. Through interactive analysis, the growth rate of the theme i output is:

$$I_i = \frac{N_i}{T_e - T_b} \tag{9}$$

Among them, N_i is the total number of information of the interactive theme i, and T_b is the output time of the first information flow, and T_e is the output time for the last information flow. In practice, an information flow often appears in different periods of time, so we use harmonic mean for calculation as follows:

$$I_i = \frac{N}{\sum \frac{1}{X_i}} \tag{10}$$

In this formula, X_i is the total number of information for a certain theme outputted in unit time, and N is the number of information flows in the unit time.

Interactive learning effect calculation. Interactive learning is mainly aimed to help students have certain capabilities, not only knowledge, but also related skills. This study will use the change of these capabilities as interactive learning effects in this paper.

Interactive learning is mainly aimed to help students have certain capabilities, not only knowledge, but also related skills. This study will use the change of these capabilities as interactive learning effects in this paper, as shown in formula 6:

$$X = \frac{\overline{X} * P}{\sqrt{CV}} = \frac{P(\sum_{i=1}^{N} X_{i(\text{Aft-test})} - \sum_{i=1}^{N} X_{i(\text{Pre-test})})}{N\sqrt{CV}} \tag{11}$$

The $X_{i(\text{Aft-test})}$ in the formula (11) was the after-test score of the i-th student in a group, while $X_{i(\text{Pre-test})}$ is the pre-test score, and P is the relative difficulty of the entity, expressed as:

$$P = \frac{\sum_{i=1}^{N} X_{i(\text{Aft-test})}}{X_{\max} N} \tag{12}$$

Where $X_{\max}$ is a full score of the test paper, CV is a variant coefficient, specifically expressed as:

$$CV = \frac{S}{\overline{X}} \tag{13}$$

S is the standard deviation of the before and after measured values, and $\overline{X}$ is the average of the before and after measured values, the ratio of the two is the variation coefficient.

The interaction effect of Moodle teaching system through interactive analysis can be obtained by above calculation, to finally provide corresponding learning resources for the occupational quality curriculum study according to interaction results, and enhance different students' aesthetic learning effect.

3.3 Integrate research-based case teaching in occupational quality curriculum teaching based on information technology

According to Six Sigma management method, based on the design idea of research-based case teaching mode integrating Moodle teaching system, based on Fig. 1, the process of applying the teaching mode in occupational quality curriculum is shown in Figure 2:

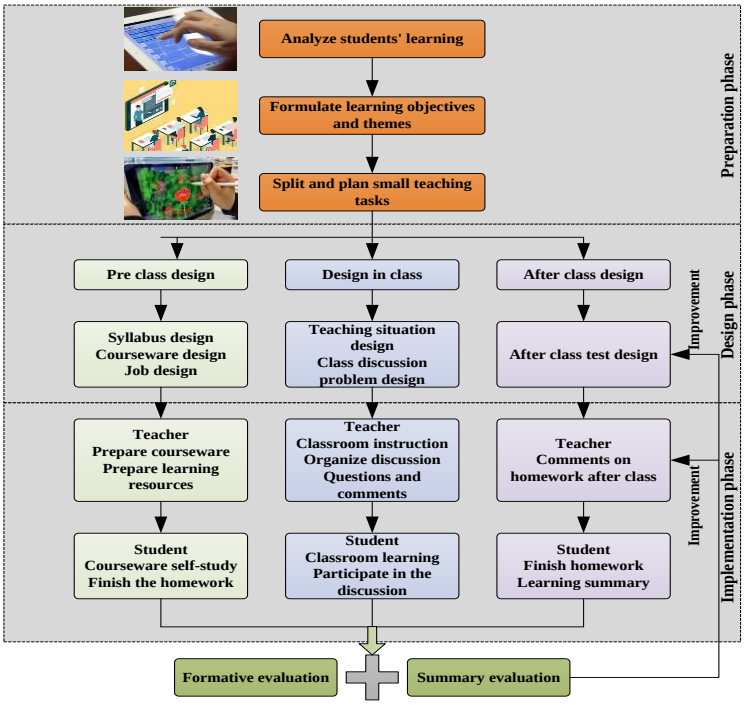

Fig. 2. Teaching design integrating research-based case teaching mode

The process of the whole teaching mode design involves five stages: (1) Preparation stage. It requires to complete three basic matters: analyze students' learning, determine learning objectives, learning themes, and plan teaching small tasks. Among them, analyzing students' learning aims to know the basic level of students' occupational quality curriculum learning, thereby determining what kind of learning goals should be designed, what learning themes can be easily accepted by students. At the same time, in order to concretize the whole teaching task, it also requires teachers to plan specific teaching small task. Figure 3 shows the preparation of the occupational quality curriculum, displays the preparation stage integrating research-based case teaching mode, displays teachers' analysis, and the students' pre-view scene.

Fig. 3. Preparation link of research-based case teaching mode in occupational quality curriculum

Design stage. It is mainly aimed to design certain teaching scenarios according to student learning situation and the advantages of Moodle teaching system, so that students can learn aesthetic education knowledge vividly, thereby increasing students' interest. At the same time, targeted design-related teaching strategies will be designed to get students participated in the whole teaching process and promote them to think and explore actively. As shown in Figure 4, research-based case teaching mode in occupational quality curriculum design allows students to complete tasks in accordance with teacher-designed scenarios by themselves or in groups, so that the students' aesthetic appreciation level is improved by stimulating students' ability to explore knowledge.

Fig. 4. Design link of research-based case teaching mode in occupational quality curriculum

Implementation stage. The research-based case teaching mode integrating Moodle teaching system is implemented in this stage, including pre-class students' self-study, and teachers' in-class explanation, student discussions, teachers' after-class tutorship, students' assignment completion. Figure 5 is the implementation stage of research-based case teaching mode in occupational quality curriculum. Students conduct online self-study by following the teaching videos preset by teachers.

Fig. 5. Implementation of research-based case teaching mode in occupational quality curriculum

Evaluation stage, including process evaluation, summative evaluation. Evaluation methods include self-evaluation, student-student evaluation, teacher evaluation, etc. Through evaluation, students can know their weaknesses in course learning and teachers can find their own deficiencies in the design of research-based case teaching mode based on Moodle teaching system.

Improvement and adjustment stage. Based on the relevant information obtained from evaluation, the teaching objectives, strategies, tasks in the first three stages will be adjusted and improved to solve the problems in teaching and other needs of students, so that the system can better mobilize students' enthusiasm to learn and enhance their learning effect of the occupational quality curriculum.

4 Teaching example and effect

4.1 Teaching example

To apply research-based case teaching mode based on Moodle teaching system, taking university art teaching as an example, specific teaching mode was designed, specifically involving five modules: pre-class teaching design, research of student's appreciation topic, students' textbook reading, collection of students' interested questions, teachers' evaluation and summary. The teaching flow chart is shown in Figure 6:

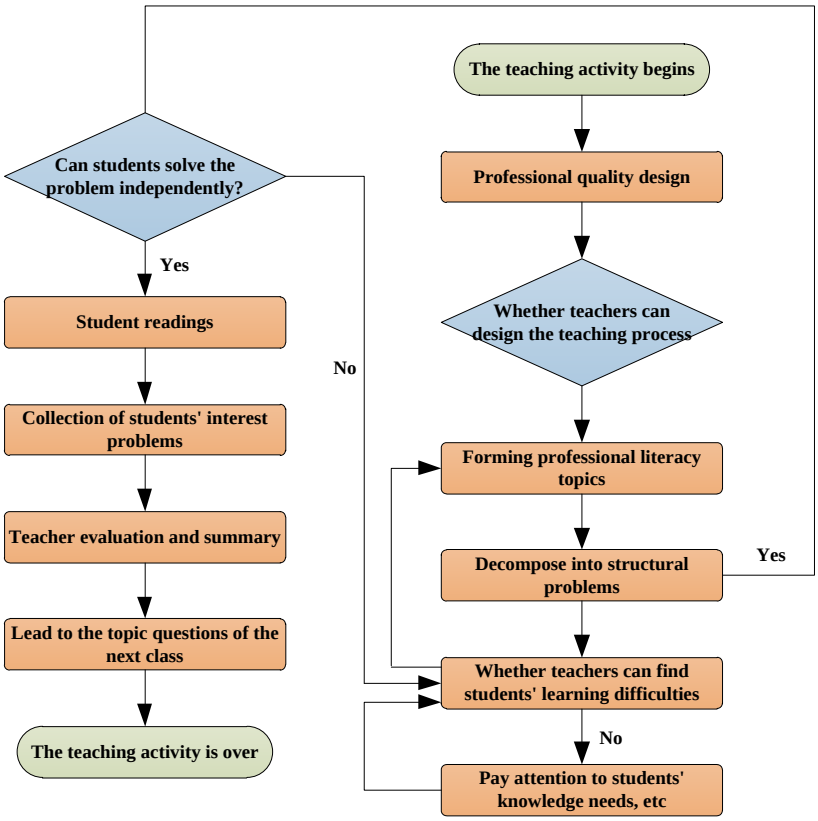

Fig. 6. Teaching flow chart of research-based case teaching mode in occupational quality curriculum

Taking the appreciation part of college occupational quality curriculum as an example, the research-based case teaching mode in occupational quality curriculum is designed as follows:

Pre-class teaching design. In this module, the teachers mainly extract and purifies questions. Firstly, teachers need to determine questions according to the teaching objectives, and then constantly decompose the problem, obtain a group of structured issues, and then conduct teaching design according to structured issues, including teaching objectives, teaching difficulties and key points, students' learning analysis, etc.

Students' exploration of topic. After the teacher completes the design of structured problems, students explore and tries these types of problems. During this period, teachers should notice students' research on topic, appropriately design relevant learning situations, and constantly reduce structured problems. By applying such research-based case teaching mode, the teaching objective in appreciation of occupational quality curriculum can be completed and students' independent exploration ability can be enhanced.

Students' textbook reading. To solve students' knowledge defects in the process of students' topic exploration, teachers can assign relevant books for reading, encourage students to integrate the ideas, problems and the textbook contents in the appreciation activities, conduct self-evaluation and self-reflection, thus promoting students to master relevant knowledge.

Collection of students' interested questions. This module is based on the students' self-reflection. Students interested questions can be collected and applied as a teaching resource to the next teaching module.

Teachers' evaluation and summary. Teaches mainly use multimedia and blackboard-writing to propose their opinions and suggestions on students' appreciation results, thinking process and innovation. At the same time, teachers can also showcase the understanding of relevant artists, and encourage students to strengthen, and enrich the achievement of university fine arts lessons.

4.2 Teaching effect

In this paper, a questionnaire survey was conducted to know students' evaluation of research-based case teaching mode based on Moodle teaching system. Specifically, the relevant literature was used to independently design the questionnaire, which included three parts: website design, teaching content, and learning interest and ability. The first 14 questions adopted Likert 5-level scoring method, strongly agree, agree, not sure, disagree, strongly disagree, scoring 5, 4, 3, 2, 1. The last one is an open problem. After the teaching practice from January to December 2020 ended, 98 questionnaires were distributed, 92 valid questionnaires were recovered, with a valid recovery rate of 98.5%.

After analyzing the 92 valid questionnaires, the teaching effect evaluation score results of research-based case teaching mode based on Moodle teaching system was obtained as shown in Table 1.

As shown in Table 1, students give high scores of website design, teaching content, and learning interest in the evaluation of research-based case teaching mode based on Moodle teaching system. Teaching content received the highest evaluation. Students believe that it is conducive to pre-class preview and after-class review, and the interactive function of platform also facilitates teacher-student communication. In addition, students believe that thanks to the teaching mode, their collaborative ability, innovation capability, and aesthetic education appreciation are significantly improved. Specific reasons are: firstly, the teaching mode starts from the basic teaching and abandon the teaching method with class as the unit. The platform allows students to conduct teaching for students with different learning levels and establish corresponding learning files through the individual characteristics of the students for more targeted learning. Moreover, teachers can create a learning QQ group online to answer students' questions at any time and guide individual student, thus teaching students in accordance with their aptitude, facilitating the communication between students, and further stimulating the potential of students. Secondly, students conduct in-depth learning and research based on the pre-study tasks designed by teachers according to their own characteristics. During the teaching process, teachers can guide students to conduct cooperative study according to their different needs, so that students can evaluate knowledge mastery

independently earlier. A kind of thinking should be conveyed in the teaching process of the occupational quality curriculum, so that students understand their own artistic capacity, and then express their emotions in artistic forms. The transformation of such concept is conducive to stimulating students' aesthetic appreciation potential and further strengthen their innovation capabilities.

Table 1. Students' evaluation of research-based case teaching mode based on Moodle teaching system (n = 92)

Item	Average	Recognition (Percentage of people)				
		Strongly agree	***Agree***	***Not sure***	***Disagreed***	***Strongly disagree***
Website design	4.08±0.07					
Clear level design	3.98±0.66	56.52%	20.65%	11.96%	3.26%	7.61%
Abundant learning resources	4.02±0.17	75.00%	16.30%	3.26%	2.17%	3.26%
Easy for teacher-student communication	4.26±0.08	68.48%	11.96%	13.04%	3.26%	3.26%
Teaching content	4.20±0.33					
Supplement classroom teaching	4.11±0.12	66.30%	19.57%	7.61%	4.35%	2.17%
Help master new knowledge	4.13±0.15	67.39%	20.65%	6.52%	1.09%	4.35%
Conductive to students' preview and review	4.37±0.72	67.39%	22.83%	7.61%	1.09%	1.09%
Learning interest	4.16±0.07					
Improve collaborative ability	4.22±0.83	64.13%	23.91%	9.78%	1.09%	1.09%
Enhance innovation capability	4.08±0.75	63.04%	25.00%	2.17%	3.26%	6.52%
Stimulate appreciation potential	4.19±0.14	65.22%	20.65%	6.52%	3.26%	4.35%

5 Conclusions

In this paper, research-based case teaching mode was applied to Moodle teaching system and the application of this teaching mode in college occupational quality curriculum was discussed. Specifically, interactive learning based on Moodle teaching system was introduced, a research-based case teaching mode based on knowledge experience was established according to Six Sigma theory. After applying the teaching mode to the actual college occupational quality curriculum teaching, the questionnaire survey was conducted to evaluate the teaching effect, and the following conclusions were drawn:

1. Moodle teaching system based on Six Sigma Management method has strengthened the targeted teaching of college aesthetic education, greatly improved students' problem-solving ability. The application of information technology-based interactive

analysis has also provided students with more learning resources, and facilitated students to fully communicate with teachers. On this basis, the integration of the integrated research-based case teaching mode will create more scenarios in the whole the entire aesthetic education process, and enhance students' enthusiasm.

2. Students have high evaluation on website design, teaching content, and learning interest in the research-based case teaching mode based on Moodle teaching system, especially for teaching content. A lot of students believe that the teaching mode has facilitated pre-class preview and after-class convenient, and the interaction function makes it more convenient for teacher-student communication. More importantly, the teaching mode has also improved the students' independent problem-solving ability, basically satisfied the basic requirements of university education.
3. However, it requires more scientific educational content to support the application effect. Therefore, the design of occupational quality curriculum content is an important aspect of occupational quality curriculum improvement.

To sum up, with the rapid development of information technology, various tools are available for college occupational quality curriculum reform. When conducting teaching, colleges and universities should adopt these technical means to enrich specific teaching content, thereby further improving teaching effect. This is also one of directions for college occupational quality curriculum reform.

6 References

[1] Chen, Q.L., Xu, M., Xu, Z.S. Research on the cultivation of professional quality of Engineering College Students Guided by employment demand. Journal of Changchun University of Science and Technology, 2012, vol. 25(4), pp. 142-144.

[2] Alsane, D.M., Lockeman, K., Moczygemba, L.R., Lynch, C., & Slattum, P.W. Exploring Predictors for Teamwork Performance in an Interprofessional Quality Improvement and Patient Safety Course for Early Learners. Journal of Research in Interprofessional Practice and Education, 2019, vol. 9(1), pp. 1-11. https://doi.org/10.22230/jripe.2019v9n1a283

[3] Zilic, I. General versus vocational education: Lessons from a quasi-experiment in Croatia. Economics of Education Review, 2018, vol. 62, pp. 1-11. https://doi.org/10.1016/j.econedurev.2017.10.009

[4] Ananto, P., Susanto, A., Wahyudi, E.N., Mulyani, S., Listiyono, H., Anis, Y., ... & Mohammed, N.A. Building Innovation Technology Concept in Creative Industry into Vocational Education Study Case in Indonesia, Malaysia and Thailand Industries. Journal of Printing Science and Technology, 2019, vol. 56(1), pp. 27-36.

[5] Zhai, Z. On the Reform and Development of Engineering Education in VocationalColleges under the Background of "New Engineering" Construction. Modern Manufacturing Technology and Equipment, 2020, vol. (7), pp. 221-222.

[6] Liu, Z.G., Jiao, Y.Q., Cao, Y.H., et al. Research on the Cultivation of Professional Quality of Higher Vocational Students under the Modern Apprenticeship System Model -- Taking the Elevator Specialty of Nantong College of Science and Technology as an Example. Vocational Technology, 2019, vol. 18(12), pp. 94-97.

[7] Liang, J.Y. Application of "magic lamp micro course" mode in high school information technology course. China Modern Educational Equipment, 2019, vol. (6), pp. 50-53.

[8] Pan, J.J. Research on process evaluation strategy of information technology classroom in senior high school based on Moodle platform. Journal of Fujian Education Institute, 2018, vol. (7), pp. 130-132.
[9] Zhen, S. Using Moodle to build a research-based learning platform -- Taking the case analysis of "mechanical foundation" course as an example. Journal of Beijing Institute of Graphic Communication, 2021, vol. 29(9), pp. 163-165.
[10] Chen, J., Li, M., Sun, J.M. Research on Instructional Design Based on Blended Learning under the background of "Internet +". Heilongjiang Education (Higher Educational Research and Evaluation), 2019, vol. (4), pp. 33-35.
[11] Kolawole, O.A., Mishra, J.L., Hussain, Z. Addressing food waste and loss in the Nigerian food supply chain: Use of Lean Six Sigma and Double-Loop Learning. Industrial Marketing Management, 2021, vol. 93, pp. 235-249. https://doi.org/10.1016/j.indmarman.2021.01.006

7 Author

Feng Xiao is an associate professor in Hengyang preschool education college, Hengyang, Hunan, China (email: 20150256@stu.nun.edu.cn).

Article submitted 2022-03-16. Resubmitted 2022-04-20. Final acceptance 2022-04-24. Final version published as submitted by the author.